Undercounter Freezer Operation Manual

i.Series® and Horizon Series™

Model Group	i.Series	Horizon Series
Plasma Storage	iPF105 (Version D)	HPF105 (Version D)
Laboratory	iLF105 (Version D)	HLF105 (Version D)

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Document History

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A	23 JAN 2013	8187	n/a	Initial release.
B	04 DEC 2013*	8953	B supersedes A	► Removed all references to mechanical Access Control. ► Added references to magnetic Access Control. ► Corrected shipping location of monitoring system backup battery for Horizon Series.
C	22 MAY 2014*	9497	C supersedes B	► Added information to operating standards from technical audit. ► Revised specifications for remote alarm contacts.
D	16 MAR 2015*	10319	D supersedes C	► Updated instruction in **Section III**, **Items 9.2** through **9.7.1** to reflect use of monitor and control interface with new Min/Max temperature recording feature. ► Added Document Updates, to Document History page. ► Added Confidential / Proprietary Notice, **Section I**, **Item 1.4** and Disclaimer, **Section I**, **Item 1.5** ► Moved Maintenance Schedule, i.Series® Components and Horizon Series™ Components to Appendices A, B and C.

* Date submitted for Change Order review. Actual release date may vary.

Document Updates

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Section I: General Information

1 About this Manual

1.1 Intended Audience

This manual is intended for use by end users of the freezer and authorized service technicians.

1.2 Model References

Generic references are used throughout this manual to group models that contain similar features. For example, “105 models” refers to all models of that size (iPF105, HPF105, iLF105, HLF105). This manual covers all undercounter freezers, which may be identified singly, by their size, or by their respective “Series.”

1.3 Copyright and Trademark

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Helmer, Inc., doing business as (DBA) Helmer Scientific and Helmer.

1.4 Confidential / Proprietary Notices

Use of any portion(s) of this document to copy, translate, disassemble or decompile, or create or attempt to create by reverse engineering or otherwise the information from Helmer Scientific products is expressly prohibited.

1.5 Disclaimer

This manual is intended as a guide to provide the operator with necessary instructions on the proper use and maintenance of certain Helmer Scientific products.

Any failure to follow the instructions as described could result in impaired product function, injury to the operator or others, or void applicable product warranties. Helmer Scientific accepts no responsibility for liability resulting from improper use or maintenance of its products.

The screenshots and component images appearing in this guide are provided for illustrative purposes only, and may vary slightly from the actual software screens and/or product components.

2 Safety

Includes general safety information for freezer operation.

2.1 Labels

Caution: Risk of damage to equipment or danger to operator

Caution: Hot surface

Caution: Shock/electrical hazard

Warning: Hazardous situation which could result in injury

Caution: Unlock all casters

Earth / ground terminal

Protective earth / ground terminal

2.2 Avoiding Injury

- ► Review safety instructions before installing, using, or maintaining the equipment.
- ► Do not open multiple, loaded drawers or baskets at the same time.
- ► Before moving unit, ensure casters are unlocked and free of debris.
- ► Never physically restrict any moving component.
- ► Avoid removing electrical service panels and access panels unless so instructed.
- ► Use manufacturer supplied power cords only.

CAUTION Decontaminate parts prior to sending for service or repair. Contact Helmer or your distributor for decontamination instructions and a Return Authorization Number.

3 General Recommendations

3.1 Intended Use

Helmer freezers are intended for the storage of blood products and other medical and scientific products.

3.2 General Use

Allow freezer to come to room temperature before switching power on.

During initial startup, high temperature alarm may sound while freezer reaches operating temperature.

3.3 Initial Loading

Allow the freezer to reach room temperature before powering on. Allow chamber temperature to stabilize at the setpoint before storing product.

NOTE Do not overload top drawer, basket, or shelf such that airflow from the unit cooler is obstructed.

4 Operating Standards

These units are designed to operate under the following environmental conditions:

- ► Indoor use only
- ► Altitude (maximum): 2000 m
- ► Ambient temperature range: 15 °C to 32 °C
- ► Relative humidity (maximum for ambient temperature): 80% for temperatures up to 31 °C, decreasing linearly to 50% at 40 °C
- ► Temperature control range: -15 °C to -30 °C
- ► Overvoltage category: II
- ► Pollution degree: 2
- ► Mains supply voltage: ±10% of nominal voltage

4.1 Stacked Undercounter Units

CAUTION

- ► For a stacked configuration, both units must have leveling feet installed.
- ► The back brace bars and front stabilizing brackets must be installed [PN 400821-1 (blue) or 400821-2 (stainless steel)].
- ► When stacking a refrigerator and freezer (104 and/or 105 models), place the heavier unit on the bottom.
- ► Do not open multiple, loaded drawers or baskets at the same time.

Call Helmer or your distributor for more information on the stacking kit, and for methods to secure both units to the wall and/or the floor.

4.2 Electrical Specifications

Refer to specification label for voltage and power consumption requirements. Voltage tolerance is ±10%. Power consumption is measured in full load Amperes.

Input Voltage	Power Consumption
115 V, 60 Hz	5.75 A
230 V, 50 Hz	2.8 A
230 V, 60 Hz	3.1 A

Circuit breakers are used only on 230 V models. The rating for 230 V models is 6 A (quantity 2).

The terminals on the remote alarm interface have the following maximum load capacity:

- ► i.Series: 0.5 A at 30 V (RMS); 1.0 A at 24 V (DC)
- ► Horizon Series: 0.25 A at 30 V (RMS); 0.25 A at 60 V (DC)

CAUTION

- ► The interface on the remote alarm monitoring system is intended for connection to the end user's central alarm system(s) that uses normally-open or normally-closed dry contacts.
- ► If an external power supply exceeding 30 V (RMS) or 60 V (DC) is connected to the remote alarm monitoring system's circuit, the remote alarm will not function properly; may be damaged; or may result in injury to the user.

4.3 Dimensions

4.3.1 Weight

NOTE The weight may vary slightly depending on installed options. Weights provided are for standard configurations as shown.

Model Family	Configuration	Weight
iPF	2 drawers	221 lbs 101 kg
iLF	2 shelves	215 lbs 98 kg
HPF	2 drawers	215 lbs 98 kg
HLF	2 shelves	209 lbs 95 kg

NOTE

- ► Plasma storage models (iPF) feature drawers as the standard storage configuration. Laboratory/ pharmacy models (iLF) feature shelves as the standard storage configuration. Any combination of drawers, baskets, and shelves may be installed.
- ► Maximum load per drawer is 100 lbs / 46 kg

4.3.2 Size

All dimensions are for the overall exterior and include items that protrude from the main unit.

Width	24” 610 mm
Height (without casters or leveling feet)	33.5” 864 mm
Depth	28.5” 724 mm

NOTE

- ► With casters, height is approximately 35.5” (915 mm).
- ► With the leveling feet fully engaged (minimum height), height is approximately 34” (889 mm).
- ► The maximum height leveling feet may add is approximately 2” (51 mm).
- ► Add 0.375” (10 mm) to the width for optional Access Control.

5 Regulatory Compliance

This device complies with the requirements of directive 93/42/EEC concerning Medical Devices, as amended by 2007/47/EC.

Sound level is less than 70 dB(A).

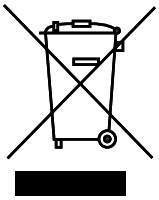
CE 0086

EC REP

Emergo Europe
Molenstraat 15
2513 BH
The Hague, Netherlands

RoHS COMPLIANT

WEEE Compliance



The WEEE (waste electrical and electronic equipment) symbol (right) indicates compliance with European Union Directive WEEE 2002/96/EC and applicable provisions. The directive sets requirements for the labeling and disposal of certain products in affected countries.

When disposing of this product in countries affected by this directive:

- ► Do not dispose of this product as unsorted municipal waste.
- ► Collect this product separately.
- ► Use the collection and return systems available locally.

For more information on the return, recovery, or recycling of this product, contact your local distributor.

6 Installation

6.1 Location Requirements

- ► Has a grounded outlet meeting national electric code (NEC) and local electrical requirements.
- ► Is clear of direct sunlight, high temperature sources, heating vents, and air conditioning vents.
- ► Has a minimum of 3” (76 mm) of space behind the freezer for clearance and feature access.
- ► Meets the limits specified for ambient temperature and relative humidity.

6.1.1 Placement

WARNING To prevent tipping:
- ► ensure the casters (if installed) are unlocked and the door is closed before moving the freezer.
- ► do not sit, lean, push or place heavy objects on upper door ledge.

1. If casters are installed, install strain relief as shown below to prevent accidental disconnection.
2. Ensure door is closed and casters (if installed) are unlocked.
3. Move freezer into place. Lock casters if installed.
4. Ensure freezer is level.

Strain relief for power cord (for freezers with casters installed)

NOTE Helmer recommends the use of leveling feet (unless casters are installed) and wall and floor brackets (PN 400472-2) for stabilization. Contact Helmer Technical Service for parts and instruction.

6.2 Temperature Probes

For each probe bottle, use:

- ► 4 oz. (120 mL) of product simulation solution (1:1 ratio of water to propylene glycol or equivalent low-temperature fluid).

6.3 Chart Recorder

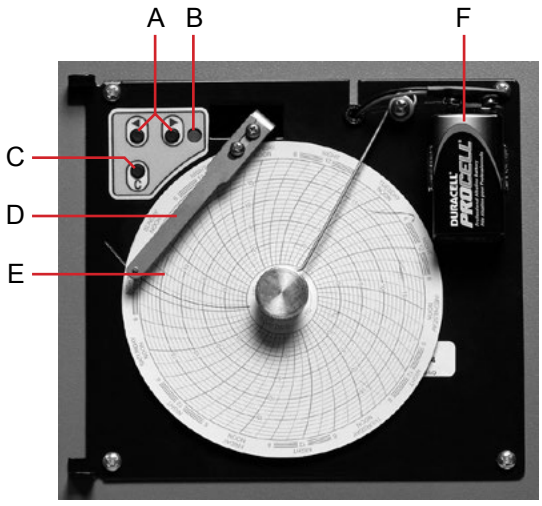
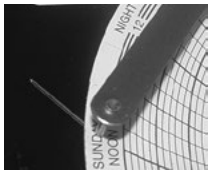


Chart recorder with paper and battery installed.

Label	Description	Function
A	Left and Right Arrow buttons	Adjust settings and stylus position
B	LED	Indicates status of chart recorder in operating mode, or selected temperature range in paper change mode
C	Chart change button	Adjust position of stylus when changing chart paper, or run a test pattern
D	Stylus	Mark temperature line on paper
E	Reset button	Restart chart recorder
F	Backup battery	Provides power during AC power failure. Connect prior to use.

6.3.1 Install and Change Chart Paper

1. Press and hold **C** button. When stylus begins to move left, release button. The LED flashes to indicate current temperature range.
2. When stylus stops moving, remove chart knob then move knob up and away from chart paper.
3. Place new chart paper on chart recorder.
4. Gently lift stylus and rotate paper so current time line corresponds to time line groove.



5. Hold chart paper and reinstall chart knob.

NOTE For accurate temperature reading, ensure that current time is aligned with time line groove when chart knob is tightened.

6. Confirm the temperature range is set to the correct value.
7. Press and hold **C** button. When the stylus begins to move right, release the button.
8. Confirm the stylus is marking the temperature correctly.

Section II: i.Series® Models

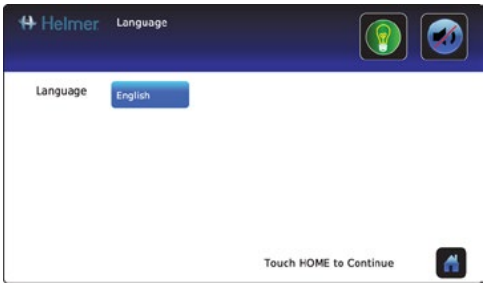
7 Operation

7.1 Initial Start Up

1 Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.
2 Switch AC ON/OFF switch ON.
3 Switch backup battery switch ON.

NOTE
- ► For models equipped with the optional Access Control, the backup battery is switched on with a key switch.
- ► The i.C³ monitoring and control system will take approximately two minutes to boot up.

4 Select language.



NOTE Active alarms are displayed on the Home screen. If an alarm condition other than High Temperature occurs, refer to the service manual for troubleshooting.

5 If an alarm sounds, temporarily mute the alarm by touching the **Mute** button.

7.2 Change Temperature Setpoint

i.C³ APPS > Touch + or – on spin box to change value.

NOTE Default setpoint is -30.0 °C

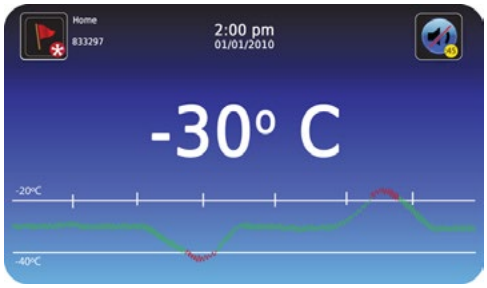
7.3 Set Alarm Parameters

> > Alarm Settings	Control the conditions and timing of alarm condition indicators displayed on the i.C³ Home screen. Touch **+** or **–** on spin box to set each parameter.

7.4 Normal Operation

The i.C³ Home screen displays temperature and alarm information, and provides icons for reaching other functions of the i.C³.

Home screen



Home screensaver (touch to return to Home screen)

7.5 Active Alarms

Home with no alarms.

Home with active alarm.

Alarm	Description
High Temperature	Chamber temperature reading is above high temperature alarm setpoint
Low Temperature	Chamber temperature reading is below low temperature alarm setpoint
Low Battery	Rechargeable battery voltage is low
Power Failure	Power to unit has been disrupted
Probe Failure	Probe not functioning properly
Door Open	Door is open beyond user-specified duration
Compressor Temperature	Compressor temperature reading is above high temperature alarm setpoint
Communication Failure Messages 1, 2, 3	**1** Communication lost between i.C³ display board and control board **2** Communication lost between i.C³ display board and internal system memory **3** Corrupt database

7.6 Mute and Disable Active Alarms

Audible alarms may be muted by touching the **Mute** button to set delay.

Unmuted *Muted*

7.7 Access Control (Optional)

Allows user-specific secure access to the freezer.

NOTE

- ► During a power failure, the backup battery provides power to the monitoring system and the power failure alarm. If the backup battery is not functioning, the power failure alarm will not be activated.
- ► During a power failure, the backup battery continues to provide power to the optional Access Control lock (if equipped). If the backup battery is not functioning, the optional Access Control lock will not secure the door.
- ► During a power failure, the optional Access Control lock will remain locked until battery power is depleted or until the backup battery key switch is switched OFF.
- ► Switching the backup battery key switch OFF will disable the monitoring system.
- ► During a power failure, switch the battery backup switch OFF and use the mechanical door key to provide secure storage for freezer contents.

7.7.1 Setup

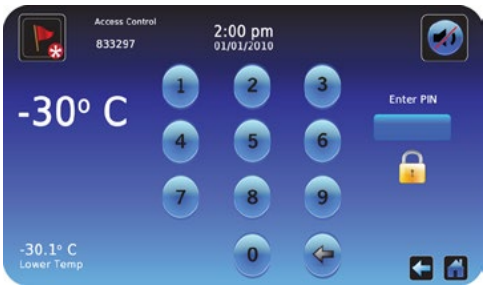
> > > Access Setup

Configure and manage use-specific accounts to allow controlled access to the freezer.

- ► Enter the supervisor PIN to set up Access Control
- ► Initial factory supervisor PIN = 5625

NOTE The supervisor PIN can not be deleted, and should be changed to prevent unauthorized user ID setup. The supervisor PIN does not allow access to the unit. At least one user ID must be set up to gain access to the unit.

7.7.2 Open Freezer with Access Control



► Enter a valid PIN using the keypad.

8 i.C³® Icon Reference Guide

	Home		Download		Scroll Arrows
	Event Log		Upload		Defrost Cycle
	Settings		Temperature Graph		Defrost Log
	i.C³ Applications		Information Log		Access Control
	Back Arrow		Compressor Log		Access Control Log
	Alarm Conditions		Icon Transfer		Contact Helmer
	Alarm Test		Display Brightness		Battery Power
	Mute				

Section III: Horizon Series™ Models

9 Operation

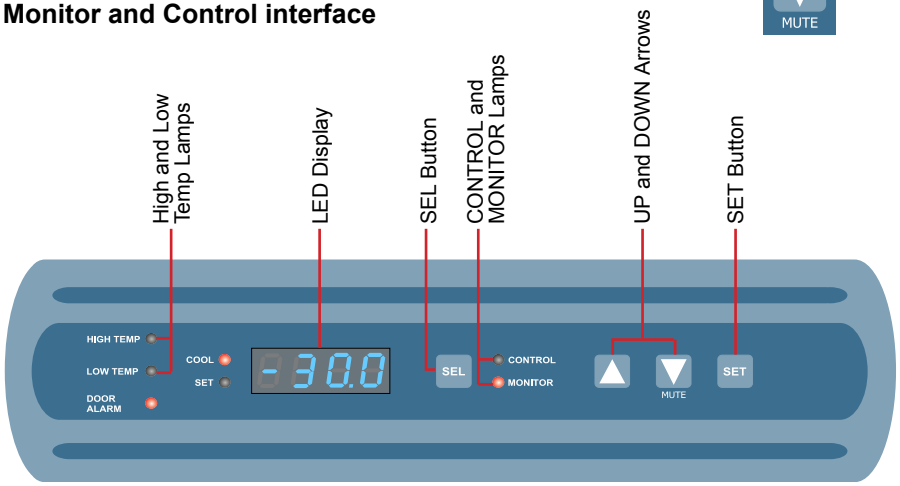
9.1 Initial Start Up

1 Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.
2 Switch AC ON/OFF switch ON.
3 Remove the 9 V battery from the literature box and install it.

NOTE
- ► For models equipped with the optional Access Control, switch the backup battery key switch ON.
- ► If an alarm condition other than High Temperature occurs, refer to the service manual for troubleshooting.

4 Press **Down Arrow** (Mute) if high temperature alarm sounds.

9.2 Monitor and Control interface



Horizon Series monitoring and control interface.

9.3 Display Minimum and Maximum Monitor Temperature Recordings

NOTE
- ► This feature is standard on Horizon Series™ models with serial numbers of 2015494 or higher. Some exceptions may exist. For confirmation on your unit, please contact Helmer Technical Service.
- ► Units that do not include the minimum and maximum recording feature will not display .C or .F when entering the program mode.

The minimum and maximum recording feature allows the user to view a minimum temperature occurrence and a maximum temperature occurrence within a given period of time. The timer provides a time reference in which those temperatures occurred.

NOTE The following steps only apply to the monitor probe.

1 View **minimum** temperature recording.
   a Press and hold the **Down Arrow** button for 1 second and listen for a single beep.
   b The display will alternate between **LO** and a valid temperature value five (5) times followed by a single beep to indicate exit back to the temperature display.

2 View **maximum** temperature recording.
   a Press and hold the **Up Arrow** button for 1 second and listen for a single beep.
   b The display will alternate between **HI** and a valid temperature value five (5) times followed by a single beep to indicate exit back to the temperature display.
3 View recorded temperature timer.

NOTE
- ► The timer denotes the period of time that has elapsed. It does not display the time at which a minimum or maximum temperature occurred.
- ► The maximum period of time the timer can record is 99:59 (99 hours and 59 minutes).

   a Press and hold either the **Up** or **Down Arrow** button for 1 second.
   b While the display is flashing the **HI** or **LO** value, press and hold the **SET** button for 1 second.
   c The display will alternate five (5) times between **CLr** and a value representing the number of hours and minutes that have elapsed since the last recording (example: 12:47 would represent 12 hours and 47 minutes). A single beep will follow to indicate exit back to temperature display.
4 Clear minimum and maximum temperature recordings.
   a Press and hold either the **Up** or **Down Arrow** button for 1 second.
   b While the display is flashing the **HI** or **LO** value, press and hold the **SET** button for 1 second and listen for a single beep.
   c While the display is flashing the elapsed time since last reset, press and hold the **SET** button for 2 seconds. **CLr** will be displayed followed by a series of 3 beeps to indicate exit back to the temperature display.

NOTE The minimum and maximum temperature and timer will reset when:
- ► the unit is powered off and battery backup is not engaged, or
- ► after 99 hours and 59 minutes have elapsed.

9.4 Change Freezer Temperature Setpoint

NOTE Default setpoint is -30.0 °C

1 Press and release **SEL** to change to Control mode. The CONTROL lamp will illuminate.
2 Press and hold **SET** to display the current setpoint temperature.
3 Hold **SET** and press the **Up** or **Down Arrow** as necessary to set the desired setpoint value.
4 Release all buttons; the setpoint is changed.
5 Press and release **SEL** to return to Monitor mode. The MONITOR lamp will illuminate.

9.5 Table of Parameters

Parameter	Visual Indicator	Range	Default
Celsius or Fahrenheit	None	.C, .F	.C
High Temperature	MONITOR Lamp & HIGH Lamp	-40.0 to 40.0 (°C) -40 to 104 (°F)	-20.0°C
Low Temperature	MONITOR Lamp & LOW Lamp	-40.0 to 40.0 (°C) -40 to 104 (°F)	-40.0°C
Monitor Offset	MONITOR Lamp	-10.0 to 10.0 (°C) -18 to 18 (°F)	Varies
Control Offset	CONTROL Lamp	-10.0 to 10.0 (°C) -18 to 18 (°F)	Varies
Hysteresis	CONTROL Lamp	0.5 to 2.5 (°C) 1 to 5 (°F)	2.0°C

9.5.1 Setting Parameter Values

1 Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to enter program mode.
2 The LED Display will show .C or .F to indicate Celsius or Fahrenheit.
3 Press and release **SEL** button to scroll through the parameters.
4 Once the desired parameter is selected, press and hold the **SET** button while pressing the **Up** or **Down Arrow** to select the desired value.
5 Release **SET** button. The new setting is saved.
6 Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to exit program mode.

NOTE Contact Helmer Technical Service for setting Hysteresis values.

9.5.2 Set Temperature Units

NOTE If temperature units are changed, the temperature setpoints, offsets and alarm settings must be recalibrated.

1 Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to enter program mode.
2 The LED Display will show .C or .F to indicate Celsius or Fahrenheit.
3 Press and hold the **SET** button while pressing the **Up** or **Down Arrow** to select the desired temperature unit.
4 Release **SET** button. The new setting is saved.
5 Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to exit program mode.

9.6 Temperature Calibration Offsets

Temperature calibration offsets indicate an acceptable margin of error between the actual temperature value and the desired temperature value.

9.6.1 Monitor Offset

► Value is factory-set to match an independent thermometer.
► Refer to the service manual for instructions in changing the Monitor Offset.

9.6.2 Control Sensor Offset

► Factory-set to match a calibrated reference thermometer.
► Varies for each freezer.

NOTICE Control Sensor Offset is factory-preset and should not be changed. Contact Helmer Technical Service for instructions regarding changing the Control Sensor Offset.

9.6.3 Hysteresis

► Allowable temperature variance on each side of the freezer setpoint.

NOTICE Hysteresis is factory-preset and should not be changed. Contact Helmer Technical Service for instructions regarding changing the Hysteresis value.

9.7 Temperature Alarm Setpoints

Flashing Lamp	Selected Setting
HIGH TEMP and MONITOR	High Temp alarm setpoint
LOW TEMP and MONITOR	Low Temp alarm setpoint

9.7.1 Change a Temperature Alarm Setpoint

1 Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to enter program mode.
2 The LED Display will show .C or .F to indicate Celsius or Fahrenheit.
3 Press **SEL** until HIGH TEMP or LOW TEMP and MONITOR lamps flash.
4 Hold **SET**, then press **Up** or **Down Arrow** to change the setpoint.
5 Release **SET** button. The new setting is saved.
6 Press and hold **Up** and **Down Arrows** simultaneously for 3 seconds to exit program mode.

9.8 Active Alarms

The controller displays temperature and alarm information.

DOOR ALARM lamp lights	Door is open (less than 3 minutes)
DOOR ALARM lamp flashes	Door has been open 3 minutes or longer *
HIGH TEMP lamp flashes	Temperature reaches high temperature set point
LOW TEMP lamp flashes	Temperature reaches low temperature set point
“PoFF” appears on display	AC power failure
“Prob” appears on display	Probe circuit is open

* Audible alarm will sound after door is open for 3 minutes.

9.8.1 Mute and Disable Audible Alarms

► Muting audible alarms does not disable alarm lamps or signals sent through the remote alarm interface.
► Press **Down Arrow** (Mute) to mute audible alarms.
► To disable all audible alarms, insert the key in the Alarm Disable switch and turn.

9.9 Access Control (Optional)

Allows user-specific secure access to the freezer.

NOTE

- ► During a power failure, the backup battery continues to provide power to the optional Access Control lock (if equipped). If the backup battery is not functioning, the optional Access Control lock will not secure the door.
- ► During a power failure, the optional Access Control lock will remain locked until battery power is depleted or until the backup battery key switch is switched OFF.
- ► During a power failure, switch the battery backup switch OFF and use the mechanical door key to provide secure storage for freezer contents.

9.9.1 Setup

The Access Control keypad was programmed at the factory with a master code (0000). The master code is used to program the keypad and enter user codes. The master code also releases the door lock.

NOTE The master code can not be deleted, and should be changed to prevent unauthorized user code setup.

Enter unique user codes for up to 100 users. Each user code is stored with a specific record location number. Keep a log of the location numbers and user codes with users' names.

9.9.2 Add User Code

- ► Enter the master code
- ► Press **1** to initiate user code programming function
- ► Enter the location number (00 - 99)
- ► Enter the user code (4 - 9 digit number)
- ► Press ***** to save changes and return to normal operation

9.9.3 Delete User Code

- ► Enter the master code
- ► Press **1** to initiate user code programming function
- ► Enter the location number (00 - 99)
- ► Press * to save changes

9.9.4 Open Freezer with Access Control

- ► Enter the user code
- ► Press #

Appendix A: Maintenance Schedule

Maintenance tasks should be completed according to the following schedule. Refer to the service manual and the i.C³ User Guide for more detail on the various tasks.

NOTE These are recommended minimum requirements. Regulations for your organization or physical conditions at your organization may require maintenance items to be performed more frequently, or only by designated service personnel.

Task	Frequency		
	Quarterly	Annually	As Needed
i.Series: Test the high and low temperature alarms. Horizon Series: Test the high temperature alarm.	✓		
Test the power failure alarm (as required by your organization's protocols).	✓ (i.Series)		✓ (Horizon Series)
(Models with Access Control) Test the Access Control battery.	✓ (Horizon Series)		
Test the door alarm (as required by your organization's protocols).			✓
Check the temperature calibration on the monitor and change it if necessary.	✓		
(Models with chart recorders) Check the backup battery for the chart recorder after an extended power failure and change it if necessary, or change the battery if it has been in service for one year. Refer to the Temperature Chart Recorder Operation and Service Manual.			✓
Check the level of the solution in the probe bottle. Refill or replace solution if necessary.			✓
► Inspect electrical components and wiring terminals in the electrical box for discoloration. Contact Helmer Technical Service if any discoloration is found. ► Inspect all wiring for terminals for secure connection. Tighten wiring terminal connections as necessary.	✓		
Examine the probe bottle and clean or replace if necessary.		✓	
Clean the condenser grill.	✓		
Clean the door gaskets, interior, and exterior of the freezer.			✓

NOTE Clean the condenser grill on a quarterly basis.

NOTE
- ► i.Series: If rechargeable battery has been in service for two years, replace battery.
- ► Horizon Series: If monitoring system battery has been in service for one year, replace battery. If the optional Access Control battery has been in service for two years, replace battery.

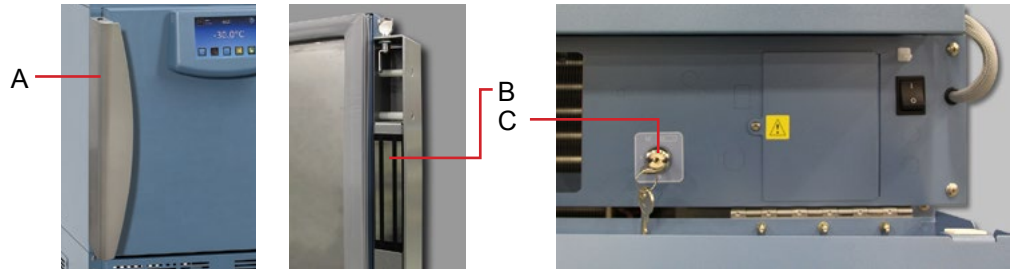
Appendix B: i.Series® Components

Front and Base

Front and base features (iPF105 model shown).

Label	Description
A	Chart recorder (standard on plasma storage models, optional on laboratory/pharmacy models)
B	i.C³ control
C	Door handle with lock
D	Leveling foot (casters are optional)
E	USB port
F	Condenser grill
G	Monitoring system backup battery switch
H	Monitoring system backup battery (behind access cover)
I	Main power switch
J	Circuit breakers (230 V models only)

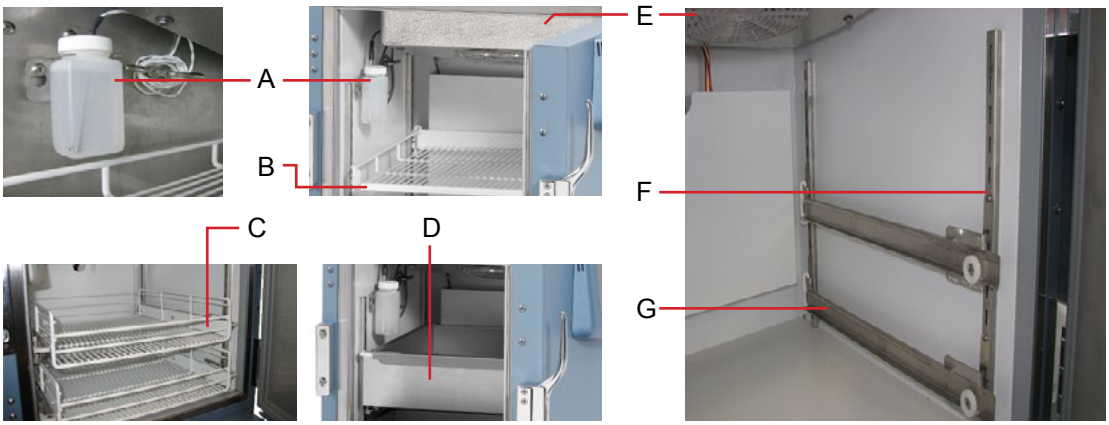
Access Control Option



Access Control features (iPF105 model shown).

Label	Description
A	Door handle (includes manual keyed lock)
B	Magnetic lock assembly (includes magnet and handle)
C	Backup battery key switch

Chamber

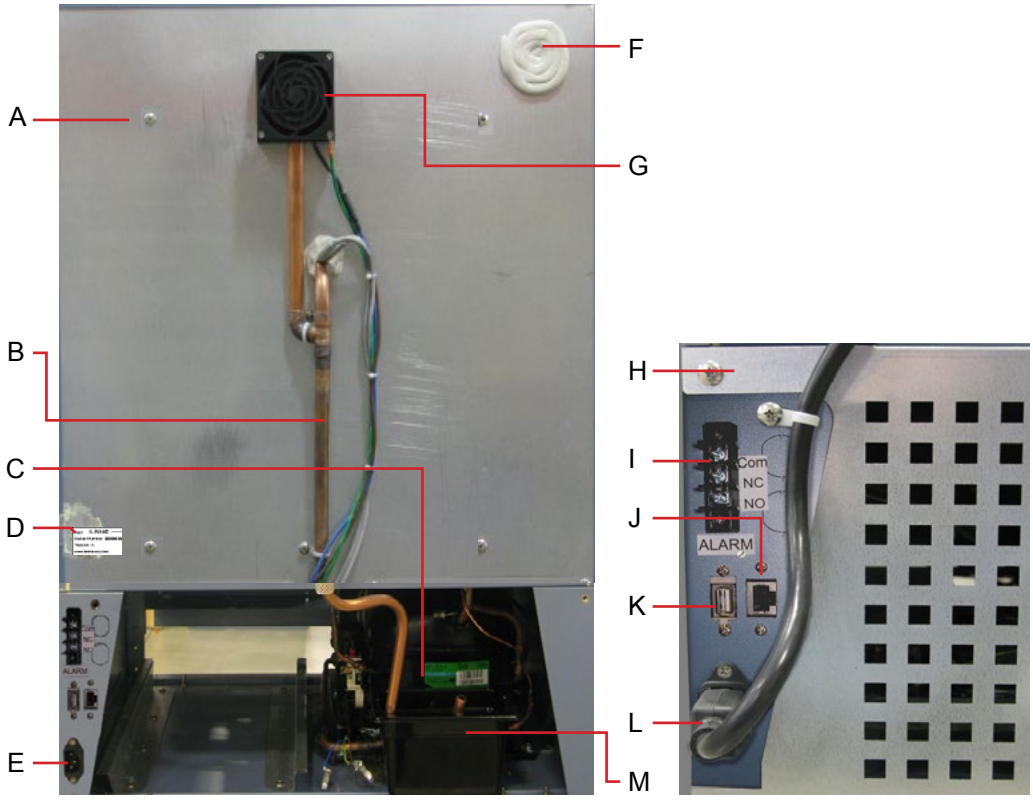


Chamber features (multiple models shown).

Label	Description
A	Probe bottle
B	Shelf (laboratory/pharmacy models)
C	Roll out basket (optional)
D	Drawer (plasma storage models)
E	Unit cooler with fan guard
F	Standard for adjusting storage components
G	Slide for drawer or basket

NOTE Plasma storage models (iPF) feature drawers as the standard storage configuration. Laboratory and pharmacy models (iLF) feature shelves as the standard storage configuration. Any combination of drawers, baskets, and shelves may be installed.

Rear

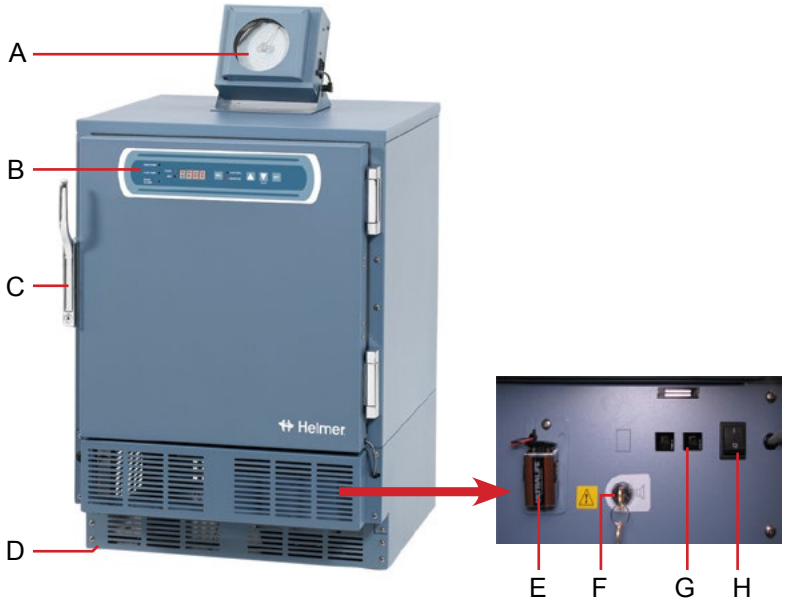


iPF105 model shown with detail from various models

Label	Description
A	Insert for stacking bracket
B	Drain line
C	Compressor
D	Product specification label
E	Power connector
F	Access port
G	External drain fan
H	Rear panel
I	Remote alarm interface
J	RJ-45 Ethernet port
K	USB port
L	Power cord
M	Condensate evaporator
Not shown	RS-232 COM port (optional)

Appendix C: Horizon Series™ Components

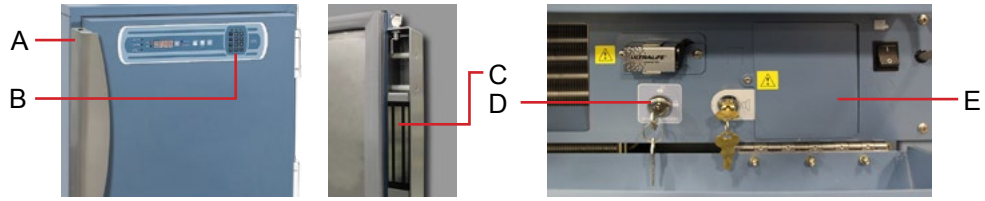
Front and Base



Front and base features (HPF105 model shown).

Label	Description
A	Chart recorder (standard on plasma storage models, optional on laboratory/pharmacy models)
B	Horizon Series temperature monitor and control
C	Door handle with lock
D	Leveling foot (casters are optional)
E	Monitoring system backup battery
F	Alarm disable switch
G	Circuit breakers (230 V models only)
H	Main power switch

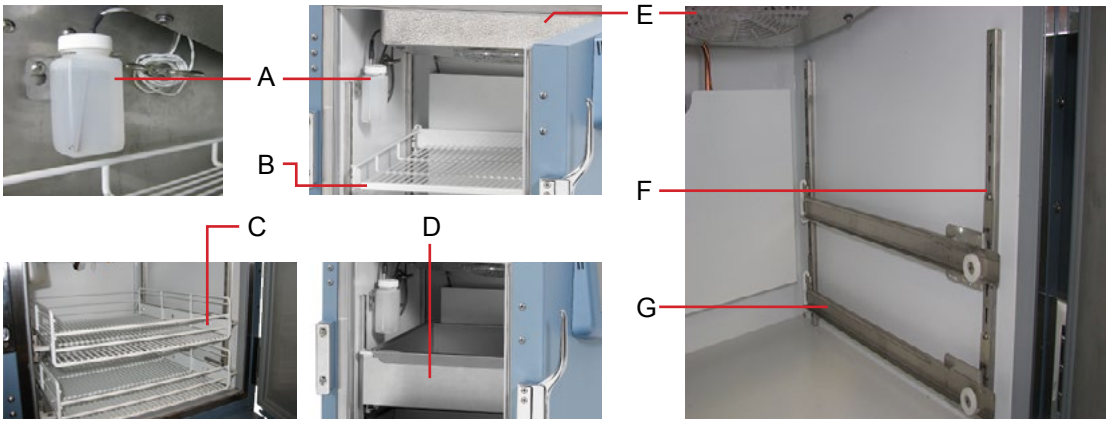
Access Control Option



Access Control features (HLF105 model shown).

Label	Description
A	Door handle (includes manual keyed lock)
B	Keypad
C	Magnetic lock assembly (includes magnet and handle)
D	Backup battery key switch
E	Backup battery (behind battery cover)

Chamber

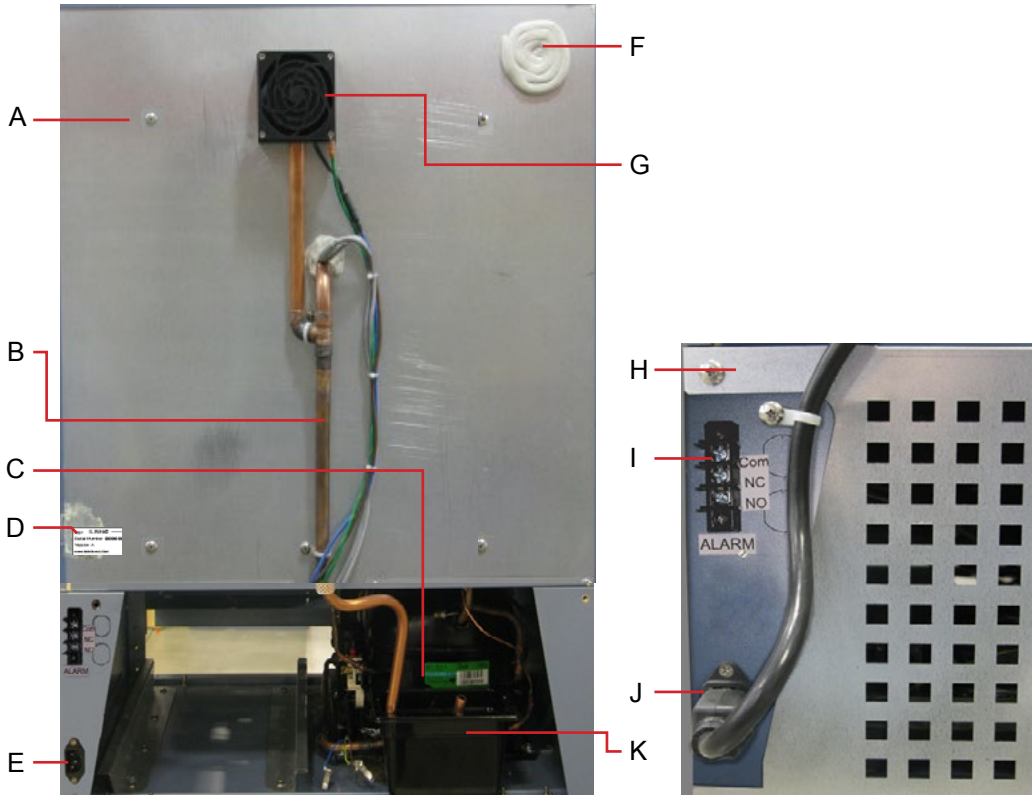


Chamber features (multiple models shown).

Label	Description
A	Probe bottle
B	Shelf (laboratory/pharmacy models)
C	Roll out basket (optional)
D	Drawer (plasma storage models)
E	Unit cooler with fan guard
F	Standard for adjusting storage components
G	Slide for drawer or basket

NOTE Plasma storage models (HPF) feature drawers as the standard storage configuration. Laboratory/pharmacy models (HLF) feature shelves as the standard storage configuration. Any combination of drawers, baskets, and shelves may be installed.

Rear



Rear features (HPF105 model shown).

Label	Description
A	Insert for stacking bracket
B	Drain line
C	Compressor
D	Product specification label
E	Power connector
F	Access port
G	External drain fan
H	Rear panel
I	Remote alarm interface
J	Power cord
K	Condensate evaporator

END OF MANUAL

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